

HEREDITARY TENDENCY.

By WILLIAM A. HAMMOND, M.D.,

(A chapter from a forthcoming "Treatise on Insanity.")

THE hereditary transmission of peculiarities of form, mental character, manner, idiosyncrasies, habits, and proclivity to disease, is no longer a matter of doubt with those best qualified to form an opinion on the subject. In fact, to this tendency of like to beget like we owe the perpetuation of the different species of animals and plants, as well as the great number of varieties produced by the will of man, or by combinations of circumstances.

We see on every side numerous instances of the existence of the law to which reference is made. The different varieties of the dog, of the ox, and other domestic animals; the several kinds of roses, apples, strawberries, and other plants, are all the results of hereditary transmission.

Resemblances in features to parents are extremely common in the progeny. A child looks like its father, its mother, or, perhaps, some collateral relation. The hereditary upper lip of the members of the house of Hapsburg is an example of this fact, and others must be familiar to most persons. In the lower animals the same law applies with equal, if not greater, force. A whole litter of puppies, for instance, will be marked like the father or mother, or, perhaps, some like one, and the remainder like the other.

Certain qualities can also be transmitted. Thus, the setter and pointer possess their peculiar accomplishments by hereditary descent from ancestors which were taught to indicate the presence of game by the actions they employ. I knew a lady who could always tell twenty-four hours in advance that rain or snow was at hand. She felt a cold sensation in both ears. Her mother had the same faculty, as has also her daughter. I have already given instances of the hereditary transmission of habits, but the following, which has recently come to my knowledge, will not be out of place:

A lady informed me that her grandmother, who had some affection of the right eye that rendered the accession of light to it unpleasant, always worked at her embroidery or sewing with that eye closed. Her daughter had no ocular disorder, but in doing any kind of needle-work, always shut the right eye. Her daughter, my informant, has a similar habit, which she acquired when quite young, although constant efforts were made to break her of the "trick." She came to me for advice relative to her little girl, eight years old, who, when given some sewing to do a few days previously, had at once closed the right eye on beginning her task. Here we have a habit descending through four generations. Instances like this almost lead us to the belief that it would be entirely practicable to form a variety of the human race the women of which would always sew with the right eye closed.

Certain natural deformities or organic deviations are likewise sometimes indubitably transmitted to the progeny. It is, therefore, by no means rare to find that the immediate ancestors of individuals with superfluous fingers or toes, club-feet, or hare-lip, were similarly affected.

Accidental anomalies or mutilations are also the subjects

of hereditary transmission. Thus, Grogner¹ states that he has observed that the colts whose ancestors had for many ascending generations been branded on a particular part of the body were born with marks corresponding in situation and appearance to those made by the hot iron. According to Blumenbach,² a man had the little finger of his right hand badly injured, so that it became crooked. He subsequently had several sons, each of whom had the little finger of the right hand twisted like that of their father.

Among the Esquimaux and Kamtchatkans it is the custom to cut off the tails of the dogs used in drawing the sledges. It is frequently the case that the puppies come into the world without a tail, or with the appendage very much abbreviated.³ Other instances of the same kind are cited by Lucas.

But the most important part of the subject of hereditary influence which we have at present to consider is in relation to the transmission of diseases or predispositions to disease. Like the transmission of the physical and mental qualities, the transfer of pathological tendencies from parents to offspring must be accepted as a fact amply capable of demonstration, but not susceptible of explanation. When we say that the seminal fluid, being derived from the blood, must possess the abnormal impress of the blood, we assert a proposition just as difficult of demonstration, and in no way an elucidation of the question. Besides, admitting that the seminal fluid of a phthisical person may contain, in an inappreciable form, the germs of tubercles, we could not explain why the offspring of such a person should remain all their lives free from phthisis, and the next generation exhibit une-

¹ Cited by Lucas, "Traité philosophique et physiologique de l'hérédité naturelle," Paris, 1850, t. ii, p. 492.

² Blumenbach, cited from Treviranus by Lucas, *op. cit.*, p. 493.

³ Langsdorff, cited by Lucas, *op. cit.*, p. 493, also Quatrefages, cited by Ribot, "L'hérédité psychologique," Paris, 1882, p. 9.

quivocal evidence of the presence of tubercular deposits in the lungs. That the tendency to certain diseases is derived from the seminal fluid of the male, and in an equal or perhaps greater degree from the ovaries of the female, does not admit of a reasonable doubt; but that there are other agencies at work capable of influencing the child while yet unborn is quite as certain. And this fact demands that a distinction shall be made between those diseases or other peculiarities which are connate and those which are purely hereditary. By a connate disease we understand one which the child possesses when born, not necessarily the result of any similar taint or impression received from the system either of the father or mother, but due to accidents or mental influences operating through the mother. For instance, a child may be born idiotic, not because either of the parents or other ancestors were similarly affected, but through the influence of some severe mental or physical shock received by the mother during her pregnancy. Another may be epileptic—when neither parent has ever been subject to epilepsy or any other disease of the nervous system—if one or other is intoxicated at the time of the intercourse resulting in conception.

Such cases are, of course, not due to hereditary transmission, for a disease cannot be communicated hereditarily which has not affected either of the parents or any other ancestor.

Many interesting cases showing the influence of the maternal mind over the offspring before birth are cited by M. de Frarieré¹ and the elder Séguin.² There is no doubt that idiocy, and other forms of disorder of the mind, may be induced in the unborn infant by strong emotional or other mental disturbance in the mother.

¹ "Education antérieure. Influences maternelles pendant la gestation," Paris, 1862.

² "Idiocy and its Treatment by the Physiological Method," New York, 1866.

A singular fact connected with the transmission of diseases, and also of deformities or resemblances, is that a whole generation, or one or more members of it, are passed over, the disease or other peculiarity appearing in the next ; or a child, instead of resembling either of his parents, has the appearance or peculiarities of one of his grandparents. This is called atavism. Its existence was known to the ancients. Aristotle, Galen, Pliny, and Plutarch refer to it, and the latter gives the case of a Greek woman who, having given birth to a black child, was tried for adultery, when it was discovered that she was the fourth generation of an Ethiopian.

A distinction must be made between those diseases which, though hereditary, are congenital, and those which appear after a lapse of time, often considerable. Thus, for example, cataract, deafness, and several kinds of deformities, belong to the first-named class, but the great majority belong to the second, and arise as a consequence of the predisposition which has been transmitted. They are, thus, of very great importance to the physician, because, as the tendency only is conveyed, and this may not be very strong, it is altogether possible frequently to prevent the predisposition being developed into positive disease.

Thus, Voltaire¹ says :

“I have almost with my own eyes seen a suicide whose case deserves the attention of physicians. A man of serious turn of mind, of mature age, and of irreproachable conduct, free from strong passions, and above want, killed himself on the 17th of October, 1769, and left a written explanation of his act, addressed to the council of the city in which he was born. This it was thought best not to publish, for fear of encouraging others to quit a life of which so much evil is spoken. In all this there was nothing astonishing ; such

¹“ *Dictionnaire philosophique*,” art. “ *Caton du suicide*.”

cases are met with every day. But the sequel is more remarkable. His father and his brother had each committed suicide at the same age as himself. What hidden disposition of the organs, what sympathy, what combination of physical laws, caused the father and his two children to perish by their own hands, by the same method, and at the same age? Was it a disease which had long previously been developed in their family, as parents and children are often seen to die of the small-pox, of pneumonia, or of some other disease? Three or four generations become blind, or deaf, or gouty, or scrofulous, at a certain age." Many similar cases have been cited by writers on the subject. The following is within my own knowledge:

A gentleman, well to do in the world, but with a slight hereditary tendency to insanity, killed himself in the thirty-fifth year of his age by cutting his throat while in a warm bath. No cause could be assigned for the act. He had two sons and a daughter—all under age at the time of his death. The family separated, the daughter marrying. On arriving at the age of thirty-five, the eldest son cut his throat while in a warm bath, but was rescued ere life was extinct. At about the same age the second son succeeded in killing himself in the same way. The daughter, in her thirty-fourth year, was found dead in a bath-tub with her throat cut. Her son, at the age of twenty-seven, attempted to kill himself by cutting his throat while in a bath at his hotel in Paris, but did not succeed. Subsequently, at the age of thirty, he made a similar unsuccessful attempt, but was again saved. A year afterward he was found in his bath by his servant with his throat cut from ear to ear.

A very striking physiological fact is not without influence upon the laws of hereditary transmission. It is well known that the children of a woman by her second husband may resemble physically and mentally her first husband, provided

she has had children by the latter. The blood of the *fœtus in utero* circulates through the system of the mother. This blood has the impress of the father derived through the seminal fluid. It must, therefore, in a greater or less degree, exert an influence upon the organism of the mother. Perhaps this is in accordance with Darwin's provisional theory of pangenesis; but whether or not, the fact exists. Now the husband, dying, and the mother marrying again and having children, is the medium for transmitting to this second set of offspring the peculiarities of mind and person which she has received from her first husband through his children before they were born. In this way the diseases of a man may be transmitted to children which are not his. In the lower animals, instances of this species of transmission are far from being rare. A bitch will have a litter one half of which will resemble in their markings their progenitor, and the other half a dog by which she has previously had offspring. In the horse the like fact has been noticed, and it doubtless prevails to some extent throughout the entire vertebrate class of animals. Breeders of domestic animals are fully aware of its existence, and are careful that the females used for raising fine stock are not approached by males of bad qualities.

That insanity is often transmitted by hereditary influence is a fact scarcely requiring discussion, but for the circumstance that it has been recently denied, by certain medical witnesses in a criminal trial, that such was ever its origin. Nevertheless, these gentlemen were by no means the first to advance the hypothesis that insanity is limited in its influence to the individual in whom it first appears, and that it never has heredity for its cause. Its author is Heinroth.¹ He says:

¹ See the German translation of Esquirol's works by Hille, of Dresden, with notes by Heinroth, Leipsic, 1837, cited by Lélut, "Du traitement moral de la folie," Paris, 1840, p. 146; and also by Lemoine, "L'aliéné devant la philosophie, la morale et la société," Paris, 1865, p. 55; also by Ribot, *op. cit.*, p. 140; also by Lucas, *op. cit.*, t. ii, p. 756.

"Insanity is the loss of moral liberty; it never depends on a physical cause; it is not a disease of the body, but of the mind; it is a sin. It is not, and it cannot be, hereditary, for the thinking ego, the soul, is not hereditary. The only things transmitted by generation are temperament and constitution, against which he who has insane ancestors should protect himself if he would escape lunacy. The man who has, during his whole life, before his eyes and in his heart, the image of God, has no fear of ever losing his reason. It is as clear as the light of day that the torments of those wretches called bewitched and possessed are the consequences of the development of remorse of conscience. Man has not only received reason; he has, besides, a certain moral power which cannot be conquered by any physical power, and which never succumbs except under the weight of its own sins."

Commenting on this extraordinary system of mental pathology, M. Lelut¹ says:

"This passage from M. Heinroth contains as many errors as it does phrases. To say that a man who has all his life kept the image of God in his heart will never become insane, is to refuse to recognize the innumerable cases of insanity developed by superstition and an ascetic life; to impute the torments of the bewitched and the possessed of the devil to remorse of conscience, is to calumniate those unfortunate persons who often have only exaggerated their sins, or have even accused themselves of crimes they never committed; to affirm that man has a moral power which cannot be overcome by any physical force, is to ignore the influence of wounds of the head, the ingestion of certain poisonous substances, inflammation of the meninges, etc., in the production of insanity. To refuse to admit that insanity may be transmitted by the process of generation, is

¹ *Op. cit.*, p. 147.

to refuse to accept the evidence of that which we see every day."

Lucas¹ asserts that Rush expresses a doubt in regard to the hereditary transmission of insanity, and the witnesses in question may have entertained a like opinion relative to his views. But this is an error, for the great American physician is emphatic enough when he declares his opinion in the affirmative, and adduces numerous examples in its support. He says:²

"A peculiar and hereditary sameness of organization of the nerves, brain, and blood-vessels, on which I said formerly the predisposition to madness depended, sometimes pervades whole families, and renders them liable to this disease from a transient or feeble operation of its causes."

He then states that application was made on one day for the admission of three members of the same family into the Pennsylvania Hospital, and that he had attended two ladies, one of whom was the fourth, and the other the ninth, of their respective families who had been affected with insanity in two generations. Moreover, he declares that when there is an hereditary predisposition to mental aberration, it is induced by feebler exciting causes than when no such tendency exists. And, again, that it generally attacks in those stages of life in which it has appeared in the patient's ancestors, and that children born previously to the attack of madness in their parents are less liable to inherit it than those who are born subsequently.

Without entering at this time into the full consideration of the question, I will adduce the authority of a few of the most eminent writers on mental derangement, premising that, with the exception of Heinroth, already cited, and

¹ *Op. cit.*, t. ii, p. 756.

² *Medical Inquiries and Observations upon the Diseases of the Mind*, fourth edition, Philadelphia, 1830, p. 46.

the modified view of Lordat,¹ I would not know where to find a single negative opinion from any writer on psychological medicine who had received a medical education. Esquirol² says:

"Hereditary influence is the most ordinary predisposing cause of insanity, especially with the rich. . . . Insanity is more frequently transmitted by the mothers than by the fathers."

Burrows³ states that:

"There certainly is no physical error in accounting insanity hereditary. Had the knowledge of this fact merely led to a closer inquiry respecting those with whom a connubial union is contemplated, it would be a commendable foresight, often conducing to the preservation of domestic bliss now too frequently interrupted by the development of this dreadful affliction in the object perhaps of our tenderest affections."

Griesinger⁴ says:

"Statistical investigations strengthen very remarkably the opinion generally held by physicians and the laity, that in the greater number of cases of insanity an hereditary predisposition lies at the bottom of the malady; and I believe that we might, without hesitation, affirm that there is really no circumstance more powerful than this."

Leidesdorf,⁵ in speaking of the hereditary character of many cases of insanity, says:

"All alienists have established the importance of this cause, to which an average of one quarter of the cases of

¹ "Les lois de l'hérédité physiologique sont-elles les mêmes chez les bêtes et chez l'homme?" Montpellier, 1842, p. 19.

² "Des maladies mentales," Paris, 1838, t. i, p. 33.

³ "An Inquiry into Certain Errors Relative to Insanity, and their Consequences, Moral and Physical," London, 1820, p. 9.

⁴ "Mental Pathology and Therapeutics," Sydenham Society Translation, p. 150.

⁵ "Lehrbuch der psychischen Krankheiten," Erlangen, 1865, p. 128.

insanity is due, though individual statements on this point differ greatly. Marcé goes so far as to assert that in nine tenths of all the cases of insanity hereditary antecedents will be found."

Luys,¹ under the heading of "hereditary cerebral states," says:

"Heredity governs all the phenomena of mental pathology with the same results and the same energy as we see it control moral and physical resemblances in the offspring.

"The individual who comes into the world is not an isolated being separated from his kindred. He is one link in a long chain which is unrolled by time, and of which the first links are lost in the past. He is bound to those who follow him and to the atavic influences which he possesses; he serves for their temporary resting-place, and he transmits them to his descendants. If he comes from a race well-endowed and well-formed, he possesses the characters of organization which his ancestors have given him. He is ready for the combat of life, and to pursue his way by his own virtues and energies.

"But inversely, if he springs from a stock which is already marked with an hereditary blemish, and in which the development of the nervous system is incomplete, he comes into existence with a badly balanced organization; and his natural defects, existing as germs, and in a measure latent, are ready to be developed when some accidental cause arises to start them into activity."

One other authority, and I am done with this question for the present. All admit the ability and knowledge with which the late Dr. Ray discussed all points connected with insanity. Relative to heredity, he says:²

¹ *Traité clinique et pratique des maladies mentales*, Paris, 1881, p. 214.

² "Contributions to Mental Pathology," Boston, 1873, p. 45.

“The course of our inquiry, then, leads us to this conclusion—that in the production of insanity there is generally the concurrence of two classes of agencies, one consisting in some congenital imperfection of the brain, and the other in accidental outward events. I do not say that mental disease is never produced by the latter class of cases exclusively. The present limited state of our knowledge forbids so sweeping a conclusion. Cases sometimes occur where the closest investigation discloses, apparently, no cause of cerebral disorder within the patient himself. There is good reason to believe that the number of such cases would be lessened by a deeper insight into the inner life, and a minuter knowledge of those organic movements which lead to disease. We know that, even in those cases in which, to all appearance, the casual incident was most competent of itself to produce the disease, the constitutional infirmity may be often discovered. Drunkenness, epilepsy, blows on the head, sunstroke, would seem capable, if any thing outward could, of producing insanity; but, as a matter of fact, we find not unfrequently behind these casual events, firmly seated in the inmost constitution of the brain, the hereditary infirmity. Can we believe that it took no part in the morbid process?”

If it be alleged that the disease insanity is not transmitted, but only the tendency to the disease, the same might be said of every other morbid condition regarded as hereditary, except those existing at the time of birth, in the parents and offspring.

Phthisis, gout, progressive muscular atrophy, and other indubitable hereditary affections, would from that point of view be non-hereditary. Besides, how would it be known, in the young infant, whether insanity existed at birth or not? Where there is so little mind as the new-born child possesses, the manifestations of insanity must be so slight as

to escape our observation. Not including cases of idiocy, there is, however, abundant evidence to show that children do occasionally exhibit some of the most intense phases of insanity at very early periods of their lives. Romberg¹ has seen the case of a child, six years of age, in which there was a blind impulse to destroy every thing upon which it could lay its hands. It rushed through the street with a knife in its hand, and was restrained with difficulty. Griesinger² states that children of three to four years of age often have attacks of crying, of wild restlessness, striking, biting, and endeavoring to destroy, which last only for a time, and which ought to be regarded as true mania.

Dr. Rush³ saw a case of insanity in a boy of seven years of age, and subsequently one in a child two years, that had been affected with cholera infantum, and another in a child of the same age, that was "affected with internal dropsy of the brain." "They both discovered the countenance of madness, and they both attempted to bite, first their mothers and afterward their own flesh."

Insanity, as a rule, makes its appearance, when hereditary, at the period of life in which the mind is most active; and often the inherent condition is so strong that it develops into more intense forms of mental derangement upon exceedingly slight cause, or even, so far as can be perceived, spontaneously. It cannot, in such cases, be prevented by any means we may employ.

It is a peculiarity of nervous affections that they are not necessarily transmitted to descendants in the same form in which they appear in the ancestors. Thus, the latter may have epilepsy and the progeny neuralgia, migraine, or some variety of mental alienation, or the reverse may occur. Neither when insanity itself is clearly due to hereditary influence is it always the case that a like type of disease is

¹ "Deutsche Klinik," 1851, p. 178. ²*Op. cit.*, p. 142. ³*Op. cit.*, p. 55.

transmitted. The ancestors, for instance, may have had general paralysis, and the descendants will exhibit the several forms of mania or melancholia.

A discussion of the subject of hereditary influence would manifestly be incomplete without reference to that of consanguinity, in regard to which there is, I think, a good deal of misunderstanding.

In the early history of mankind, marriages among blood relations were common. The Persians, Tartars, Scythians, Medes, Phœnicians, Egyptians, and Peruvians, not only married their sisters, but their daughters and their mothers. Instances of such marriages among members of the royal families of antiquity are well known.

The laws of the ancient Germans allowed consanguineous marriages, as did also those of the Arabs up to the period of Mahomet,¹ and the Jews, notwithstanding the prohibitions of Moses, continue them up to the present day. All civilized nations allow them within certain degrees. In the State of New York, for instance, first cousins may marry, as may also uncle and niece, or aunt and nephew. The State of Kentucky, however, prohibits the marriage of first cousins, and of all nearer degrees of relationship.

The dangers of consanguineous marriages have been pointed out by many authors.

M. Rilliet² contends that all such marriages are in themselves pernicious, and tend with great certainty to a lowering of the vital force. The effects he divides into two categories:

1. Those which relate to the parents, under which head are:

a. Failure of conception.

¹ "La consanguinité et les effets de l'hérédité," par V. La Perre Roo, Paris, 1881, p. 4.

² "Lettre sur l'influence de la consanguinité sur les produits du mariage," *Bulletin de l'Académie de Médecine*, t. xxi, p. 746.

- b.* Retardation of conception.
- c.* Imperfect conception.
- 2. Those which relate to the progeny :
 - a.* Imperfections of various kinds.
 - b.* Monstrosities.
 - c.* Imperfect physical and mental organization.
 - d.* Tendency to diseases of the nervous system, such as epilepsy, imbecility, idiocy, deaf-mutism, paralysis, and various cerebral affections.
 - e.* Tendency to strumous diseases.
 - f.* Tendency to die young.
 - g.* Tendency to succumb to diseases which others would easily resist.

It is easy to see that Rilliet has made several tendencies out of one. Thus, the categories under *b* and *c* are manifestly included in *a*, and those under *f* and *g* in *d* and *e*.

After a full consideration of all that Rilliet has to advance, I feel bound to agree in the main with De Roo¹ in the opinion that common-sense teaches us that all these ills do not proceed from consanguineous marriages, and that it would be very difficult for Rilliet to prove the half of what he has advanced.

Among the opponents of such marriages are Devay,² Heliot,³ and Boudin,⁴ in France; Mitchell,⁵ in Great Britain; and Bemis,⁶ in the United States. It was mainly through the exertions of the latter that the State of Kentucky enacted a law prohibiting the marriage of blood-relations nearer than second cousins.

¹ *Op. cit.*, p. 9.

² "Du danger des mariages consanguins," Paris, 1862.

³ "Contribution à l'étude de la consanguinité," Paris, 1875.

⁴ "Dangers des unions consanguines," etc., Paris, 1862.

⁵ "On the Influence of Blood Relationships in Marriage," *Memoirs of the Anthropological Society of London*, vol. ii, 1866.

⁶ "On the Evil Effects of Marriages of Consanguinity," *North American Medico-Chirurgical Review*, vol. i, 1857, p. 97.

It is undoubtedly true that consanguineous marriages often result in the birth of children who are malformed, idiotic, deaf-mutes, or who become in after years the subjects of epilepsy, insanity, and other affections of the nervous system.

On the other hand, it is undoubtedly true that many such marriages take place, the results of which are as perfect in every respect as could be desired. Dr. Bourgeois¹ wrote the history of his own family, which was the issue of a union in the third degree of consanguinity. During the ensuing one hundred and sixty years there were ninety-one marriages, of which sixteen were consanguineous. Of these latter, all were productive, and there was not a single case of malformation or other physical or mental disease in the offspring.

Huth² cites from Dr. Thibault the case of a slave-dealer who died in the year 1849, at Widah, Dahomey, leaving behind him four hundred disconsolate widows, and about one hundred children. By order of the king, the whole of this family was interned in a particular part of the country, where reigned the most complete promiscuity. In 1863 there were children of the third generation, and Dr. Thibault, who verified the fact himself, asserts that at that time, although all these people were born from all degrees of incestuous unions, there was not a single case of deaf-mutism, blindness, cretinism, or any congenital malformation. Huth cites many other instances of isolated communities intermarrying continually without detriment to the offspring.

The truth appears to be found in the fact that consanguineous marriages are not in themselves productive of evil results, either to the parents or offspring; and that the ill

¹ Cited by Ribot, "*De l'hérédité*," Paris, 1882.

² "*The Marriage of Near Kin*," etc., London, 1875, p. 161.

consequences are to be ascribed to the operation of the law of hereditary influence, which, of course, is doubled so far as the progeny is concerned. If it is absolutely certain that a family is free from all taint of any kind whatever, there is no physiological reason why a man should not marry any female relative, however near; but, as that can never be positively assumed, it is better to prohibit such marriages down to, or even including, second cousins. There are few persons who cannot call to mind one or more consanguineous marriages which have resulted in idiocy, epilepsy, insanity, or other mental or nervous diseases in the children. I am quite sure that there is a greater tendency to the production of such affections than of any other, many striking examples of the fact having come under my observation.